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# Eugenics Then and Now: Constitutional Limits on the Use of Reproductive Screening Technologies

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*by* HANNAH LOU*

## Introduction

Borrowing from the ever astute Jane Austen, it is a universal truth that an expecting mother in possession of reproductive intentions must be in want of a perfect baby. While perfection is in the eye of the beholder, advances in genetics have opened up a world of tools that parents can use to control the reproductive process and their progeny. These tools, known collectively as assisted reproductive technologies ("ART"), can range from orally ingested medication to more invasive techniques such as in vitro fertilization. Although ART has been traditionally limited to the context of fertility treatments, prenatal screening and diagnosis are increasingly utilized by curious parents to gather information about themselves and their potential children during the reproductive decision-making process.

However, with this access, parents and societies confront a broad range of ethical, legal, and personal questions about how the information should be used. In September 2013, 23andMe, a direct-to-consumer genetic testing company, was awarded a patent titled "Gamete donor selection based on genetic calculations."[1] The grant of this patent by the United States Patent and Trademark Office ("USPTO") raised the specter of eugenics and reignited the debate

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1. *See* Gamete Donor Selection Based on Genetic Calculations, U.S. Patent No. 8543339 B2 (filed Dec. 4, 2009), *available at* http://www.google.com/patents/US8543339.

over genetic screening and the extent humankind should tinker with reproduction for medical and non-medical purposes. Genetic screening is under particular scrutiny because of its mass accessibility, non-invasiveness, and availability before conception and during pregnancy. In this Note, I explore the history and evolution of eugenics in the United States, the development of reproductive screening techniques, and the constitutional boundaries of using genetic information to screen for or preselect the traits of offspring.

Part I of this Note traces the historical roots of eugenics, its rise and fall during the early twentieth century, and the landmark legal decisions that legitimized and repudiated it. Part II delves into the Supreme Court's recognition of the unenumerated right to procreative autonomy, including the use of contraceptives and a woman's right to abortion. Part III examines the development of DNA databases and genetic screening, and the specter of modern eugenics that it raises. Part IV advocates that, based on previous Supreme Court decisions and the direction that reproductive screening technologies are evolving towards, laws that limit use should delineate between medical and non-medical uses. In non-medical uses, laws should articulate the governmental interests in preventing the harm that may be caused by individual biases in the aggregate. Part V explores the role that regulatory agencies and professional codes can play to prevent reproductive screening technologies from providing a "backdoor to eugenics."

## I. History and Evolution of Eugenics in the United States

The Oxford English Dictionary defines "eugenics" as "the science of improving a human population by controlled breeding to increase the occurrence of desirable heritable characteristics."[2] Although eugenics began much earlier in human history, the word itself formally came into being in 1883, through the social research of Sir Francis Galton, who derived much of his inspiration from Charles Darwin's work on natural selection.[3] According to Galton, "the key to human progress would rest on a national program of better breeding, in which the intelligent and the accomplished, the

2. *See Eugenics, Definition*, OXFORD DICTIONARIES, http://www.oxforddictionaries.com/us/definition/american_english/eugenics (last visited Mar. 18, 2014).

3. FRANCIS GALTON, INQUIRIES INTO HUMAN FACULTY AND DEVELOPMENT 24 (Macmillan ed. 1883) (Galton coined the word "eugenics;" a term derived from the Greek words for "well born" and "good breeding.").

men and women of demonstrated high moral character—the educated upper classes—would conceive more children, while the shiftless, the chronic poor, the insane and feebleminded, and the 'criminal class' would be discouraged, preferably prevented, from breeding at all."[4] The then-emerging field of genetics, especially Mendelian theories on inheritance, provided the tools and "cloak of scientific legitimacy" for eugenic goals.[5]

As a social movement, eugenics reached its peak in the early 1900s, where it was practiced by governments and influential figures around the world.[6] These practices ranged from birth control and genetic screening, to much more derided policies such as marriage restrictions, segregation, compulsory sterilization, and most abhorrently, genocide. The scientific reputation and popularity of eugenics started to decline around the 1930s following Nazi Germany's use of it as a justification for the sterilization and extermination of millions of "undesirables, including Jews and Gypsies."[7]

In the United States, the eugenics movement also gained momentum during the turn of the century among intellectuals and scientists, and expanded to political action by the government to reduce the influx of the "genetically inferior."[8] States accomplished

4. *See* NANCY L. GALLAGHER, BREEDING BETTER VERMONTERS: THE EUGENICS PROJECT IN THE GREEN MOUNTAIN STATE 1 (1999).

5. Sonia M. Suter, *A Brave New World of Designer Babies?*, 22 BERKELEY TECH. L.J. 897, 902–03 (2007).

6. Daniel Wikler, *Can We Learn From Eugenics?*, 25 J. MED. ETHICS 183, 184 (1999).

7. *See* Matthias M. Weber, *Ernst Rudin, 1874–1952: A German Psychiatrist and Geneticist*, 67 AM. J. MED. GENET. 323 (1996) ("Ernst Rudin . . . was one of the major representatives of German psychiatry, genetics, and eugenics in the first half of the twentieth century . . . [and] was influenced early on by . . . the ideas of social Darwinism and 'racial hygiene' in Germany after 1890. Rudin began his career in psychiatry at Emil Kraepelin's clinic in Munich, where he developed the concept of 'empirical genetic prognosis' of mental disorders. He published his first results on the genetics of schizophrenia in 1916. From 1917 to 1945 Rudin was director of the Genealogical Demographic Department at the German Institute for Psychiatric Research . . . Nazi health policy required a scientific basis to justify its actions, and Rudin's ideas corresponded partially with this kind of thinking. In 1934 he prepared the official commentary on the 'Law for the Prevention of Genetically Diseased Offspring.' The connections of Rudin's department to National Socialism can be understood as one of the main reasons for the critical attitude towards psychiatric genetics in Germany after 1945.").

8. *See* Paul A. Lombardo, *Medicine, Eugenics, and the Supreme Court: From Coercive Sterilization to Reproductive Freedom*, 13 J. CONTEMP. HEALTH L. & POL'Y 1, 1–2 (1996).

this goal through legislation that restricted marriage of the "feebleminded," immigration quotas on "biologically inferior" ethnic groups, and involuntary sterilization of mentally deficient individuals.[9] It is estimated that over 60,000 United States citizens were involuntarily sterilized as part of state legislative enactments during the reign of eugenics.[10]

As states continued to adopt sterilization laws in the 1920s, a growing number of opponents raised constitutional challenges under the Fourteenth and Eighth Amendments.[11] In a preemptive measure, proponents of eugenic sterilization initiated a lawsuit in Virginia to test the constitutionality of the state's sterilization law, which had been carefully redrafted to circumvent the legal problems that brought down prior legislation.[12]

Seventeen-year-old Carrie Buck was the first Virginian chosen to be sterilized.[13] The case, *Buck v. Bell*,[14] ultimately reached the Supreme Court, where an overwhelming majority of the justices held that the 1924 Virginia Eugenical Sterilization Act did not violate due process or equal protection under the Fourteenth Amendment.[15] In reaching their conclusion, the justices gave great weight to expert testimony that stressed the societal benefits of avoiding hereditary "feeblemindedness," and Justice Holmes infamously declared that "three generations of imbeciles are enough."[16] Although the Supreme Court opinion highlighted the

9. DANIEL J. KEVLES, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY 100–03 (1985).

10. PHILLIP REILLY, THE SURGICAL SOLUTION: A HISTORY OF INVOLUNTARY STERILIZATION IN THE UNITED STATES 2 (1991).

11. KEVLES, *supra* note 9, at 109.

12. Paul A. Lombardo, *Three Generations, No Imbeciles: New Light on* Buck v. Bell, 60 N.Y.U. L. REV. 30, 36–45 (1985).

13. Phillip Thompson, *Silent Protest: A Catholic Justice Dissents in* Buck v. Bell, 43 CATH. LAW. 125, 127 (2004) (Carrie Buck, a young white woman who was orphaned as a child, "was placed with foster parents, the Dobbs, when she was three years old and was removed from school at twelve to help clean their home. At seventeen, she claimed to have been raped by the Dobbs' nephew and had a daughter out of wedlock, named Vivian. In 1924, just one year later, she was placed in the Virginia Colony [for the Epileptic and Feebleminded] because she was allegedly epileptic, feeble minded, and morally delinquent. Shortly after, Dr. Albert Priddy, the Virginia Colony Superintendent and prime sponsor of the Virginia sterilization statute, petitioned to have her sterilized pursuant to the law. The sterilization order was approved, and was subsequently appealed all the way to the United States Supreme Court.").

14. Buck v. Bell, 274 U.S. 200 (1927).

15. *Id.* at 207.

16. *Id.*

underlying racism, class bias, and careless oversimplification of scientific notions that marked the eugenics movement, *Buck* bolstered eugenics policymaking at the time by giving it legal legitimacy.[17] Four years after the case was decided in 1927, twenty-eight states had implemented eugenic sterilization laws and for over a decade, approximately 3,000 individuals were sterilized each year.[18]

Eugenics also reared its head in United States immigration policy, which at that time aimed to restrict foreigners from coming into and remaining in the United States.[19] In the same year when the Virginia Eugenical Sterilization Act passed, the Federal Immigration Restriction Act was also adopted.[20] The latter act implemented national origin quotas for foreigners that remained in place until 1965.[21] Anti-miscegenation laws were also passed in twenty-eight states.[22] While primarily implemented to prohibit mixing between white and blacks, the laws also forbade whites from marrying other minorities, including Chinese, Hindus, Japanese, and Native Americans.[23] *Scott v. Georgia*,[24] *Green v. State*,[25] *Eggers v. Olson*,[26] and *Jackson v. State*[27] are a few of the many cases that upheld anti-miscegenation laws during that era.

What marked the decline of eugenics in the United States was not so much a result of domestic initiatives as it was due to events that played out in the international arena. During World War II, Nazi Germany implemented eugenics programs on a horrific and unprecedented scale.[28] The resulting atrocities need not be and cannot be adequately addressed in this Note, but they led to

17. KEVLES, *supra* note 9, at 111.

18. PHILLIP R. REILLY, *Eugenics, Ethics, Sterilization Laws*, *in* ENCYCLOPEDIA OF ETHICAL, LEGAL, AND POLICY ISSUES IN BIOTECHNOLOGY 205, 208 (Thomas H. Murray & Maxwell J. Mehlman eds., 2000).

19. Lombardo, *supra* note 8, at 5.

20. *Id.*

21. *Id.* at 5–6.

22. *Id.*

23. *Id.* at 20–21.

24. Scott v. Georgia, 39 Ga. 321 (1869).

25. Green v. State, 58 Ala. 190 (1877).

26. Eggers v. Olson, 104 Okla. 297 (1924).

27. Jackson v. State, 37 Ala. App. 519 (1954).

28. Michael Berenbaum, *The Uniqueness and Universality of the Holocaust*, *in* A MOSAIC OF VICTIMS: NON-JEWS PERSECUTED AND MURDERED BY THE NAZIS 20 (1990).

universal revulsion of Nazi eugenics and made Americans question their own state laws on the subject.[29] In 1947, the Supreme Court upheld a Fourteenth Amendment challenge to Oklahoma's Habitual Criminal Sterilization Act.[30] The Court found that involuntary sterilization as a punishment for committing certain categories of crimes violated the Equal Protection Clause, and rejected the State's argument of preventing "criminal traits" from being passed down to future generations.[31] It also recognized "marriage and procreation [as] fundamental to the very existence and survival of the race" and as a "basic liberty."[32] Nonetheless, eugenics programs continued for several decades.[33] The Virginia Eugenical Sterilization Act was repealed in 1974, but *Buck* still has not been formally overturned.[34]

To discuss the dark past of eugenics is not to completely dismiss it as singularly evil. Rather, it is the complexity of the term, coupled with the varying intentions and understanding of its practitioners that makes contextual analysis and discussion necessary as we grapple with its gray areas today. While it is clear that eugenics and its accompanying ideas no longer exist in the same sweeping, over-simplistic, and racially biased form as they did in the twentieth century, developments within the field of genetics and reproductive technology continue to raise questions of what lines our society and laws should draw in eugenics.

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29. KEVLES, *supra* note 9, at ix. ("During the heyday of eugenics—much of the first half of the twentieth century—social prejudice often overwhelmed scientific objectivity in the investigation of human genetics. Social distinctions of race and class were commonly attributed to differences in biological merit. After World War II, however, biologists in the United States and Britain fought—by and large successfully—to emancipate human genetics from such biases in order to establish it as a solid field of science that would explain the complexities of human hereditary and assist medicine by illuminating the relationship of genetics to disease.")

30. Skinner v. Oklahoma, 316 U.S. 535 (1942).

31. *Id.* at 538.

32. *Id.* at 541.

33. REILLY, *Eugenics, Ethics, Sterilization Laws*, *supra* note 18, at 211 ("Although one cannot point to a moment in which state-sanctioned eugenical sterilization in the United States ended, a satisfactory date is 1983 when a class-action lawsuit brought by women in Virginia who had been sterilized without their consent while in state facilities was settled.").

34. *Id.* at 211–12.

## II. Constitutional Recognition of Procreative Autonomy

Growing legal protection of reproductive rights has also influenced and will continue to influence the scope of modern eugenic policies. A line of cases, starting from *Griswold v. Connecticut*,[35] to *Eisenstadt v. Baird*,[36] to the landmark cases, *Roe v. Wade*[37] and *Planned Parenthood of Southeastern Pennsylvania v. Casey*,[38] provided constitutional protection for and recognition of individual interests in procreative autonomy. *Griswold* involved a Connecticut law that prohibited the use and distribution of contraceptives.[39] Estelle Griswold, the director of Planned Parenthood and a physician, was prosecuted for providing contraceptives to a married woman.[40] On appeal, the Supreme Court invalidated the state law and found the right to marital privacy to be fundamental within the "penumbra" of the Bill of Rights.[41] In *Eisenstadt*, the Supreme Court struck down a state law banning distribution of contraceptives to unmarried persons under the Equal Protection Clause of the Fourteenth Amendment.[42] In *Roe*, the Court controversially held that the Constitution gives a woman the relatively unfettered right to terminate her pregnancy prior to fetal viability—the time at which the fetus can survive on its own outside the womb.[43] *Casey* subsequently reaffirmed *Roe* and held that right to abortion is fundamental.[44]

Grounded in the Due Process Clause of the Fourteenth Amendment, the right of martial privacy and the right to make procreative choices have also been internalized within a substantial portion of our culture.[45] As Justices Souter, Kennedy, and O'Connor articulated in *Casey*: "At the heart of liberty is the right to define one's own concept of existence, of meaning, of the universe, and of the mystery of human life. Beliefs about these matters could not define the attributes of personhood were they

35. Griswold v. Connecticut, 381 U.S. 479 (1965).
36. Eisenstadt v. Baird, 405 U.S. 438 (1972).
37. Roe v. Wade, 410 U.S. 113 (1973).
38. Planned Parenthood of Se. Pa. v. Casey, 505 U.S. 833 (1992).
39. *Griswold*, 381 U.S. at 480.
40. *Id.*
41. *Id.* at 484.
42. *Eisenstadt*, 405 U.S. at 446.
43. *Roe*, 410 U.S. at 147.
44. *Casey*, 505 U.S. at 834.
45. *Id.* at 851.

formed under the compulsion of the State."[46] Therefore, procreative liberty at the individual level—the right to decide whether or not to have offspring—includes the freedom to take actions such as using contraceptives, terminating pregnancies, and using reproductive technologies.[47] Some commentators fear that this individual discretion, especially as it pertains to prenatal genetic testing and advanced reproductive technologies, will provide a "backdoor to eugenics" at the individual level instead of the state level.[48]

However, procreative liberty is also not absolute. In *Gonzales v. Carhart*, the Supreme Court upheld a law prohibiting partial birth abortions.[49] The Court ruled that the Partial-Birth Abortion Ban Act did not impose an undue burden on the right to abortion.[50] The Court continued to say that the State has a compelling interest in protecting human life in this situation, and suggests the partial birth abortion method is similar to killing a newborn infant.[51] The law also does not need to give doctors unfettered choice regarding the method used.[52] In sum, according to the Court, a law regulating abortion is unconstitutional only if it would be an undue burden for a large fraction of women.[53] After *Carhart*, it is likely that fundamental liberty or privacy interests in procreation do not include all manners of reproductive decisions; however which ones are included requires careful analysis and balancing of interests.

## III. Development of DNA Databases and Assisted Reproductive Technologies

To place fear of a "backdoor to eugenics" in our modern context requires an overview of the scientific and technological developments that have shaped and are shaping reproduction. Over the last few decades, prospective parents' control over the genetic makeup of their children has evolved from simply deciding with

46. *Id.*

47. *Id.*

48. *See* Angus Clarke, *Is Non-Directive Genetic Counselling Possible?*, 338 Lancet 998, 1000 (1991) (contending that "an offer of prenatal diagnosis implies a recommendation to accept that offer, which in turn entails a tacit recommendation to terminate a pregnancy if it is found to show any abnormality").

49. Gonzales v. Carhart, 550 U.S. 124 (2007).

50. *Id.* at 168.

51. *Id.* at 158.

52. *Id.* at 163.

53. *Id.* at 134.

whom to procreate to being able to study the genes of prospective parents, select the number of viable embryos produced, undergo various genetic screenings, and use other assisted reproductive technologies.[54] In 1953, James Watson and Francis Crick discovered the structure of the DNA molecule.[55] The discovery catalyzed an effort to sequence the entire human genome. The Human Genome Project, "an international scientific research project with a primary goal of determining the sequence of chemical base pairs which make up human DNA, and of identifying and mapping the total genes of the human genome from both a physical and functional standpoint," was completed in 2003 and has significantly added to our genetic knowledge.[56] At the same time, the reduction in DNA sequencing costs outpaced Moore's Law.[57]

Since the 1970s, families have been able to use preconception, preimplantation, or prenatal screening to select against various genetic and chromosomal diseases.[58] However, although reproductive genetic testing has been possible for over four decades, earlier methods were not widely adopted due to the invasiveness of such procedures.[59] Today, a range of noninvasive tests are available to expecting mothers.

More recently, preimplantation genetic diagnosis has given prospective parents the opportunity to screen and select embryos based on their susceptibility to a spectrum of genetic and chromosomal disorders.[60] Parents and health professionals often feel an ethical imperative to screen for a variety of hereditary diseases, such as sickle cell anemia, hemophilia, and cystic fibrosis.[61]

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54. *See* Jamie King, *Predicting Probability: Regulating the Future of Preimplantation Genetic Screening*, 8 YALE J. HEALTH POL'Y L. & ETHICS 283 (2008).

55. James D. Watson. & Francis H. C. Crick, *A Structure for Deoxyribose Nucleic Acid*, 171 NATURE 737–38 (1953).

56. Institute of Medicine (US) Forum on Microbial Threats, *The Science and Applications of Microbial Genomics: Workshop Summary* Appendix D, Glossary (2013).

57. *See* Kris Wetterstrand, *DNA Sequencing Costs: Data from the NHGRI Genome Sequencing Program (GSP)*, www.genome.gov/sequencingcosts (last visited Apr. 17, 2014).

58. *See* Sonia M. Suter, *The Routinization of Prenatal Testing*, 28 AM. J.L. & MED. 233, 235 (2002).

59. *See* Joseph Woo, *A Short History of Aminocentesis, Fetoscopy, and Chronic Villus Sampling*, http://www.ob-ultrasound.net/amniocentesis.html (last visited Apr. 17, 2014).

60. King, *Predicting Probability*, *supra* note 54, at 285.

61. John A. Robertson, *Liberty, Identity, and Human Cloning*, 76 TEX. L. REV. 1371, 1407 (1998).

In terms of limitations, the screening only provides probabilities that the fetus will be born with the disease or disorder.[62] However, better understanding of the human genome and improvements in sampling DNA from mothers, embryos, fetuses have also allowed for more particularized screening.[63] For example, 2009 marked the birth of the first baby the be screened for a gene that indicates a predisposition to breast cancer.[64]

The various private interests and social rationales that drive parents to undergo medical screening for their prospective offspring—to prevent future suffering in a child with a genetic condition, to avoid the economic costs of caring for a child with serious birth defects or diseases—reflect an unspoken discomfort with human disabilities and imperfections. That discomfort, coupled with a bias towards termination when abnormalities are found, create justifications and attitudes for interference with nature. Legal pressures for health care providers also create incentives to encourage prenatal testing to avoid wrongful birth claims.[65] Overall, use of reproductive screening technologies has very much become part of the culture of pregnancy.

The desire for information about the genetic makeup of prospective offspring and action on that information for medical purposes is within the conventional understanding of protected procreative choice. But is there a point where acquiring and acting on that knowledge would cause harms that would justify limiting either the acquisition or the act? Carrier screening prior to conception seems to pose the fewest risks of harm. However, when that screening is used to exclude an embryo or fetus from birth, questions about the selection itself and promotion of individual-driven eugenics arise.

62. King, *Predicting Probability*, *supra* note 54, at 285.

63. *Id.* at 309.

64. Kate Devlin, *Birth of First British Baby Genetically Screened for Breast Cancer*, TELEGRAPH, Jan. 9, 2009, *available at* http://www.telegraph.co.uk/health/healthnews/4208538/Birth-of-first-British-baby-genetically-screened-for-breast-cancer.html (last visited Mar. 28, 2014).

65. Suter, *supra* note 58, at 251.

## IV. Legal Line-Drawing in Potential Regulations of Reproductive Screening Technologies

### A. Reproductive Screening for Medical Purposes is Likely Protected Under the Rubric of Reproductive Autonomy

Although the Supreme Court has given a relatively wide berth to individual procreative autonomy, including recognizing a right to use contraceptives and a woman's right to abortion, it has not directly recognized a right to use assisted reproductive technologies.[66] However, lower federal court decisions may provide insight into how the reproductive freedom analysis will be applied in this context.

First, courts have recognized parental rights to make medical decisions for their children.[67] In 1983, a New York Court of Appeals' case, *Weber v. Stony Brook*, upheld the right of parents to make medical decisions for newborns with severe congenital defects.[68] Lawrence Washburn, a stranger to the parents, attempted to legally intervene in the case of Baby Jane Doe, an infant born with spina bifida and serious complicating disorders.[69] When Baby Jane Doe's parents chose palliative care over aggressive corrective surgery, Washburn made repeated attempts to have the New York courts force the surgery.[70] The Court of Appeals ultimately ruled that Washburn overstepped his authority, and that the parents' decision was medically and legally valid.[71] *Weber* set a precedent for protecting the rights of parents and limiting the rights of government and unrelated third parties to make medical decisions for infants.[72]

Applying *Weber* to a preconception or pregnancy timeframe, it is highly likely that parental decisions as to their prospective children will also be protected. Therefore, if a prenatal genetic screen suggests that an embryo or early trimester fetus has a severe genetic defect, it would be within the parent's right to terminate the pregnancy or discard the embryo (in the case of preimplantation genetic diagnosis before in vitro fertilization). Furthermore, the

66. *See generally Griswold*, 381 U.S. 479; *Roe*, 410 U.S. 113; *Casey*, 505 U.S. 833.
67. Weber v. Stony Brook, 60 N.Y.2d 208 (1983).
68. *Id.*
69. *Id.* at 211.
70. *Id.*
71. *Id.* at 213.
72. *Id.*

Supreme Court has already held in *Roe* that embryos, and certainly gametes, are not persons within the definition of the Constitution, and that constitutional protection for fetuses is triggered only at the point of fetal viability.[73]

In terms of federal decisions that directly address whether the procreative autonomy recognized in *Roe* and *Casey* extends to prenatal genetic testing, the only case on point is a 1990 decision by the Northern District of Illinois, *Lifchez v. Hartigan*.[74] There, physicians challenged the Illinois Abortion Law, which "prohibited experimentation on a human fetus unless the experimentation was therapeutic to the fetus," on the grounds that it violated the woman's right to privacy in reproduction and that the law was unconstitutionally vague.[75] The vagueness stemmed from the fact that "experimentation" could also encompass prenatal testing, which is not "therapeutic" but often used medically.[76] The District Court struck down the Illinois law and concluded that the Fourteenth Amendment protected a woman's ability to access prenatal testing.[77] More specifically, the constitutional right to abortion that is relatively unhindered before fetal viability includes the right to submit to a procedure that provides information that assists in a woman's reproductive decision.[78]

In addition to procreative autonomy, women also have a sex equality interest in a right to reproductive screening for medical purposes. Within the family structure, childcare burdens are often disproportionally placed on women and those burdens become even heavier when the child has special or additional needs.[79] Preventing women from accessing information about the health risks of her prospective offspring can often "significantly compromise [a woman's] ability to make decisions regarding their role in society and their life path."[80]

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73. *Roe*, 410 U.S. at 157.

74. Lifchez v. Hartigan, 735 F. Supp. 1361 (N.D. Ill. 1990).

75. *Id.* at 1363; Jamie S. King, *Not This Child: Constitutional Questions in Regulating Noninvasive Prenatal Genetic Diagnosis and Selective Abortion*, 60 UCLA L. REV. 2, 44 (2012).

76. *Lifchez*, 735 F. Supp. at 1366.

77. *Id.* at 1377.

78. *Id.*

79. *See* Priscilla J. Smith, *Give Justice Ginsburg What She Wants: Using Sex Equality Arguments to Demand Examination of the Legitimacy of State Interests in Abortion Regulation*, 34 HARV. J.L. & GENDER 377, 411–12 (2011).

80. King, *supra* note 75, at 63.

Those who oppose the use of reproductive screening technologies often do so on moral grounds—that humans should not play god when manipulations of the gene pool not only have individual consequences, but also unknown population-wide repercussions in the aggregate. Behind that criticism is a fear of "backdoor to eugenics" and that the rights of individuals with chromosomal abnormalities or genetic diseases are being violated when gametes, embryos, or fetuses are screened to prevent their birth. Some critics raise the argument that screening specifically for birth defects such as Down syndrome, which often result in early abortion or a choice to not implant the embryo, violates the Equal Protection Clause of the Fourteenth Amendment.

Although the equality concern for disabled individuals in the context of reproductive screening should not be lightly treated, it will be difficult to bring them from the realm of bioethics into applicable law. First, the reproductive choice of parents in the medical context constitutes private action that, even if discriminatory, is within their right to procreative autonomy. Allowing private actors the choice to use preconception, preimplantation, or prenatal screening does not rise to state action such that it appears the government is encouraging or mandating that people take steps to avoid giving birth to a certain class of individuals. Secondly, even if state action is implicated when the hospital or clinic applies the screening technology, the Supreme Court expressed in *Washington v. Davis*[81] that discriminatory impact alone is insufficient to prove discrimination by the government.[82] A showing of discriminatory intent must also be made.[83] Even though *Davis* dealt with racial discrimination, the same would likely apply in this context, especially since the Supreme Court has not extended "suspect classification" to disabled individuals.[84] Finally, avoiding disability in prospective offspring does not mean that individuals with existing disabilities or diseases are deprived of their constitutional interests or discriminated against in practice.

81. Washington v. Davis, 426 U.S. 229 (1976).

82. *Id.*

83. *Id.*

84. *See* City of Cleburne v. Cleburne Living Ctr., Inc., 473 U.S. 432 (1985).

### B. Reproductive Screening for Non-Medical Purposes is Likely Subject to Limited Governmental Intervention

However, a much more difficult set of questions arise when the selection or screening is done for non-medical purposes, such as to select for gender, physical traits, intelligence, or beauty. The 23andMe patent implicates this area of non-medical screening.[85] Currently, 23andMe's main business is collecting DNA from customers and analyzing it to provide information about health and ancestry.[86] However, its new patent encompasses trait selection in prospective offspring, through a tool called the Family Traits Inheritance Calculator.[87] Although 23andMe's official position is that it has no plans to apply it to that end—a spokesperson for the company said that the tool offers customers "a fun way to look at such things as what eye color their child might have or if their child will be able to perceive bitter taste or be lactose tolerant"[88]—when the patent application was filed five years ago, the company "thought 'the technology could have potential applications for fertility clinics so language specific to the fertility treatment process was included in the patent.'"[89]

Looking at the patent itself, it explains how the inquiring parent can specify certain traits that he or she wants in a child.[90] Then, based on that person's genetic profile, a computerized system "performs inheritance calculations pertaining to the [traits] of interest and identifies one or more preferred donors for the recipient."[91] The patent also contains twenty-eight claims that define three inventions at different levels of generality. Claim 1 defines "a *system* for gamete donor selection . . . "[92] Claims 2 through 10 and 22 are dependent claims that define variations of that general invention.[93] Claim 11 defines "a *method* for gamete

85. Gamete Donor Selection Based on Genetic Calculations, *supra* note 1.

86. *23andMe Ancestry*, https://www.23andme.com/ancestry/ (last visited Mar. 30, 2014).

87. *A 23andMe Patent*, http://blog.23andme.com/news/a-23andme-patent/ (last visited Mar. 30, 2014).

88. Karen Kaplan, *23andMe's Designer Baby Patent is 'a Serious Mistake,' Critics Charge*, L.A. TIMES, Oct. 3, 2013, *available at* http://articles.latimes.com/2013/oct/03/science/la-sci-sn-designer-baby-patent-23andme-dna-20131003 (last visited Mar. 30, 2014).

89. *Id.*

90. *See* Gamete Donor Selection Based on Genetic Calculations, *supra* note 1.

91. *Id.*

92. *Id.*

93. *Id.*

donor selection . . . "[94] Claims 12 through 20 and 23 are dependent claims that define variations on that general invention.[95] Claim 21 defines "a non-transitory *computer program* product for gamete donor selection . . . "[96] Claims 24 through 28 define variations on that general invention by using dependent claims.[97]

Article I, Section 8, Clause 8 of the Constitution empowers Congress to grant patents, among other avenues, to promote the "Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[98] Title 35 U.S.C. §101 states that patents may be granted for "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."[99] Courts have interpreted this section broadly.[100] Therefore, the technology developed by 23andMe certainly falls within the realm of patentable subject matter.[101] However, from a policy perspective, it is debatable as to the wisdom of granting a private organization, especially one with the backing of internet juggernaut Google, a limited monopoly over technology that can analyze DNA from a variety of individuals to identify a "preferred donor" who would be most likely to produce the traits that the inquiring parent preselects.[102] As one commentator noted: "As human existence becomes increasingly embedded in technology, the impact of traditionally patentable subject matter upon the exercise of individual liberties grow."[103] Furthermore, the collection of massive genetic data triggers a host of questions about genetic privacy that is outside the scope of this Note, but worth exploring, especially in the commercialization and criminal law context.

94. *Id.*

95. *Id.*

96. *Id.*

97. *Id.*

98. U.S. CONST. art. I, § 8, cl. 8.

99. 35 U.S.C.A. § 101 (West 2012).

100. *See, e.g.*, Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980); American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1 (1931); Shell Dev. Co. v. Watson, 149 F. Supp. 279, 280 (D.C. 1957).

101. *See* Gamete Donor Selection Based on Genetic Calculations, *supra* note 1.

102. *Id.*

103. John R. Thomas, *Liberty and Property in Patent Law*, 39 HOUS. L. REV. 569, 610 (2002).

In application, 23andMe and other organizations providing similar direct-to-consumer genetic testing allow reproductive screening to become even broader in scope and more accessible.[104] In our often competitive culture where parents seek maximum resource advantages for their children, the prospect of enhanced traits has a strong appeal.[105] This pressure is already evident in the athletic world, where scandals over the use of performance enhancing drugs have rocked almost every professional sport; from swimming to baseball, cycling, and more.[106] On a societal scale, the more technology is used to select against lesser non-medical conditions and traits, the more removed our expectations become as to what is acceptable or healthy, thereby also changing our medical expectations. It is not difficult to imagine that this evolution of our norms may cycle back to individual reproductive choices, and in aggregate, create the "backdoor to eugenics" that is invocative of the 1997 science fiction movie *GATTACA*.[107]

Although procreative and parental autonomy encompass much of reproductive screening technology, it does not legitimize every such use of this technology.[108] Even in *Lifchez*, the protected access to prenatal testing was in the context of an infertile woman trying to get pregnant.[109] Since reproductive screening technology is now used not just in the fertility context, *Lifchez* may be distinguishable. When it comes to a law that places limits on individual use of reproductive technology to screen for traits, an appropriate frame of inquiry in balancing reproductive autonomy and state interests is to first ask whether the technological use is "centrally connected with reproductive choice," followed by whether use of the technology is likely to cause harm to others.[110] The less connected a use is to protected constitutional values, the less scrutiny the law faces.[111]

104. *See* Gamete Donor Selection Based on Genetic Calculations, *supra* note 1.

105. Rick Maese, *Gene Therapy's Impact on Sports Worries Experts: It Could Be Used to Create Bigger, Stronger, Faster Super-Athletes*, ORLANDO SENTINEL, May 22, 2005, *available at* http://articles.orlandosentinel.com/2005-05-22/news/0505220263_1_gene-therapy-steroids-sports-officials (last visited Apr. 2, 2014).

106. *Id.*

107. *GATTACA*, IMDB.COM, http://www.imdb.com/title/tt0119177/ (last visited Apr. 17, 2014).

108. *See generally Roe*, 410 U.S. 113; *Casey*, 505 U.S. 833.

109. *Lifchez*, 735 F. Supp. 1361.

110. King, *Predicting Probability*, *supra* note 54, at 327.

111. *See Roe*, 410 U.S. 113; *Casey*, 505 U.S. 833.

With regards to the first question, the use of reproductive screening for non-medical purposes, although related to reproductive choice, usually has a less central connection than if done for medical purposes such as to prevent disease. In addition, sex equality concerns for women are diminished in this circumstance since it does not increase her baseline burden of childcare. Nonetheless, for some women and in certain cultures, a non-medical characteristic may still be central to her reproductive choice, and thus presumptively protected against restriction. Therefore, the core of the difference lies in the second question: likelihood of harm to others. Screening for certain traits is unlikely to be linked to animus against a particular group in the medical context. After all, with some localized variances, diseases and genetic mutations as a whole affect individuals across races and genders. However, allowing selection for certain non-medical traits brings in high risks of racial and gender bias, among others, that are invocative of eugenics in the early twentieth century. If certain traits—gender, body type, eye color, stature, for example—can be selected against, individual choice, when aggregated, will lead to both fewer people with such traits and less tolerance for diversity. It can also exacerbate existing prejudices against individuals with the disfavored traits. In such cases, there are strong state interests in limiting the use of screening to prevent the physical, psychological, and social harms that may result.

Inequality and societal harm have already manifested in the practice of genetic prescreening for gender. Gender imbalances already pose significant societal problems for countries like India and China.[112] Due to cultural biases, such screening disproportionally and negatively impacts females since sex selection strongly favor males. In the Asia region, this has resulted in the loss of over 160 million potential females and skewed male to female ratio to biologically impossible levels.[113] This imbalance has created and will continue to create growing sexual violence towards women, forced marriages, and unrest among young males who cannot find partners.[114] Since the government has a compelling interest in maintaining a natural female to male ratio, a law limiting the use of reproductive technologies for gender-screening purposes may be

112. MARA HVISTENDAHL, UNNATURAL SELECTION: CHOOSING BOYS OVER GIRLS, AND THE CONSEQUENCES OF A WORLD FULL OF MEN 6 (2011).

113. *Id.*

114. *Id.* at 15.

upheld by the court as long as it is narrowly tailored.[115] Several countries have already enacted such legislation. For example, both the United Kingdom's Human Fertilization and Embryology Act[116] and Canada's Assisted Human Reproduction Act[117] ban sex-selection practices for non-medical reasons. The latter bans "any procedure . . . that would ensure or increase the probability that an embryo will be of a particular sex, or that would identify the sex of an *in vitro* embryo, expect to prevent, diagnose or treat a sex-linked disorder or disease."[118]

However, opponents of a similar ban in the United States may criticize it as overly broad since it will include inquiring parents who may not be screening for gender out of a bias against one or the other. He or she could be doing so out of secondary interests such as having children with a mix of genders or simply out of curiosity. Perhaps more importantly, a blanket ban would not prevent a woman who does not undergo any early screening from finding out the sex of the fetus during the second trimester, and aborting the fetus then. Although this may appear extreme, the overarching principal can be applied to other non-medical reproductive screening that is rooted in prejudices that are more prevalent in the United States.

### C. Judicial Scrutiny Along the Reproductive Timeline

In the regulation of reproductive screening for non-medical purposes, timing also matters. The prelude to reproductive choice is the choice of who to mate with—or in the donor context, whose egg or sperm to use. Within certain societal bounds, people are free to make that decision, and thus indirectly, screen for their future children's race, eye color, and other features. It would be near impossible for governmental restrictions on natural mate choice to pass constitutional muster.

The United States also currently takes a laissez-faire approach to commercial egg donations. Societal preference for certain traits over others is especially evident when looking at the market value of donor eggs. A cursory examination of the ad section of any leading college's newspaper will often show advertisements seeking egg donors from physically attractive, highly educated females of

115. *Casey*, 505 U.S. at 929.

116. Human Fertilisation and Embryology Act, 2008, c. 22, § 11, sch. 2 (Eng.).

117. Assisted Human Reproduction Act, S.C. 2004, c. 2 (Can.).

118. *Id.* at § 5(e).

specific races.[119] High five-figure premiums are placed on these "well-pedigreed" eggs.[120] Since egg "donation" programs are mostly run by private infertility clinics, occur early in the reproductive process, and are not considered to involve sale of body organs (eggs and sperm are deemed bodily products), effective governmental oversight is significantly lacking.

Regardless of the medical or non-medical purpose behind reproductive screening technologies, attempts at governmental limitations of these technologies will run into similar barriers as regulation of the egg and sperm "donation" market. Screening, like donation, occurs early in the reproductive timeline. Noninvasive procedures, such as preimplantation genetic diagnosis, are done prior to the embryo being placed in a host's body. Even invasive procedures like amniocentesis, sampling of the amniotic fluid that surrounds a developing fetus to examine fetal DNA, occur during the second trimester. The Supreme Court held in *Roe* and *Casey* that the State's "important and legitimate interest in protecting the potentiality of human life" only gains great weight in comparison to the strength of a woman's liberty interest when the fetus reaches viability.[121] Given that at the latest, screening takes places during the second trimester where the fetus still toes the line of independent existence outside the womb—although advances in medical technology may eventually push up viability—decisions based on information gleaned from screening would have already been made by then. Therefore, absent narrow tailoring and clear indication of aggregate harm, governmental limits on the use of reproductive screening technologies will be unlikely to pass strict scrutiny review. Furthermore, even if publicly funded medical institutions are prevented from offering reproductive screening for certain non-medical purposes, the willingness of the private sector to meet demand would undermine the purpose of the ban anyways.

119. Annie M. Lowrey, *Will You Be My Baby's Mama? The Egg Donor Market Wants You, Harvard Women, and It'll Pay*, THE HARVARD CRIMSON, Apr. 29, 2004, *available at* http://www.thecrimson.com/article/2004/4/29/will-you-be-my-babys-mama/ (last visited Apr. 16, 2014).

120. *Id.*

121. *Casey*, 505 U.S. at 945–46 (Rehnquist, C.J., concurring) (citing *Roe*, 410 U.S. at 162).

## V. Alternatives to Placing Governmental Limitations on the Use of Reproductive Screening Technologies

However, governmental oversight does not mean an absolute limitation, which would be subject to strict scrutiny. In addition to or as an alternative to outright bans on access to certain types of non-medical and potentially discriminatory uses of screening, regulatory bodies and professional organizations can address the ethical problems raised by reproductive screening. In *Casey*, the Court stated that:

> Though the woman has a right to choose to terminate or continue her pregnancy before viability, it does not at all follow that the State is prohibited from taking steps to ensure that this choice is thoughtful and informed. Even at the earliest stages of pregnancy, the State may enact rules and regulations designed to encourage her to know that there are philosophic and social arguments of great weight that can be brought to bear in favor of continuing the pregnancy to full term . . . [122]

This suggests that instead of necessarily looking for legal policing of expanded use of genetic technology in reproduction, it could be more productive to take a more policy-oriented approach. For example, the United Kingdom has the Human Fertilisation and Embryology Authority, an independent regulator that oversees the use of gametes and embryos in fertility treatment and research.[123] Through national or state regulatory agencies, the United States can also provide more oversight of providers of these services to ensure that ethical lines are not crossed. This would allow monitoring of the safety and transparency of the reproductive and genetic services provided, as well as help for consumers to stay informed of the risks of error inherent in screening technology. Currently, the Unites States has no regulatory agency comparable to that in the United Kingdom, but progress is being made. On the federal level, three agencies share piecemeal regulation of ART, including reproductive screening technologies. The Center for Disease Control collects and

122. *Casey*, 505 U.S. at 872 (O'Conner, Kennedy, and Souter, JJ.).

123. Human Fertilisation and Embryology Act, 1990, c. 37, § 5 (U.K.).

publishes data on ART procedures and success rates.[124] The Food and Drug Administration controls approval and use of drugs and medical devices, and has jurisdiction over testing of reproductive tissues.[125] The Center for Medicare and Medicaid Services implements the Clinical Laboratory Improvement Act to ensure the quality of laboratory testing.[126] However, no agency has collected or can provide comprehensive data on the use of reproductive screening technologies and in particular, the extent and impact of non-medical use. Without such data, it will be difficult to draw lines around governmental regulation of this industry.

Even with governmental agency oversight, some may claim that regulations cannot reflect the expertise and flexibility needed to effectively control reproductive screening technologies. This effective control requires balancing all stakeholder interests and adapting to rapidly evolving technology. Therefore, some argue that "[t]he medical profession is far better situated to self-regulate health practices, including the morally debatable ones," and that the government should focus more broadly on "influenc[ing] and encourag[ing] the appropriate professional societies to take action."[127] Medical societies such as the American Society for Reproductive Medicine have created clinical practice guidelines addressing issues such as how many embryos to implant in any *in vitro* fertilization cycle.[128] In addition, the medical profession also self-regulates via methods such a licensing and board certification requirements to ensure that medically and ethically sound advice are given to individuals seeking technological assistance in reproduction. Many physicians and researchers also feel that oversight is more appropriate coming from the medical community given the face-to-face relationship that medical providers have with their patients.

In an ideal world, self-regulation would be sufficient. However, healthcare providers practice under a wide array of beliefs. While

124. *Assisted Reproductive Technology*, CENTER FOR DISEASE CONTROL AND PREVENTION, http://www.cdc.gov/art/ (last updated Aug. 28, 2014).

125. CHARLES P. KINDREGAN & MAUREEN MCBRIEN, ASSISTED REPRODUCTIVE TECHNOLOGY: A LAWYER'S GUIDE TO EMERGING LAW AND SCIENCE, 195–97 (2006).

126. *Clinical Laboratory Improvement Amendments*, CMS.GOV, http://www.cms.gov/Regulations-and-Guidance/Legislation/CLIA/index.html (last updated Aug. 28, 2014).

127. Bratislav Stankovic, *"It's a Designer Baby!": Opinions on Regulation of Preimplantation Genetic Diagnosis*, 2005 UCLA J.L. & TECH. 3, 30 (2005).

128. *Practice Committee Documents*, AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE, http://www.asrm.org/Guidelines/ (last visited Apr. 17, 2014).

that diversity lends patients the choice to find someone whom they are comfortable with to address private health problems, it also enables patients who are turned down by one practitioner to find another more willing provider. Perhaps as an assurance of a last resort, civil liability such as medical malpractice may temper the more mercenary motives of healthcare providers. Nonetheless, it is clear that private and governmental regulation must operate in tandem to address the societal issues that growing use of reproductive screening technologies bring.

## Conclusion

As I suggested at the beginning of this Note, while it is clear that eugenics and its surrounding ideas no longer exist in the same sweeping, over-simplistic, and racially biased form as they did in the early twentieth century, the legal, ethical, and social conflicts around the use of reproductive screening technologies will only grow as scientific advances afford consumers more choice. The Constitution recognizes a privacy interest in procreative autonomy that will make it difficult to place limits on private actions and will examine state regulation of medical reproductive screening under a strict scrutiny standard. However, depending on the use of the technologies, access to non-medical screening may be subject to broader regulation if the technologies impose serious harms on the persons most directly affected by them. But, since governmental regulation is lagging, professional safeguards should be the first line of protection against unethical uses of reproductive screening technologies. Overall, a commitment to exploring legal avenues and self-regulation in an increasingly technology-driven reproductive process will prevent a "backdoor to eugenics" and allow the human population to truly flourish.